

Nalco Docket No. 7774  
Customer No. 49459

In the United States Patent and Trademark Office

Applicants: Brian T. Holland et al ) Examiner: Daniel S. Metzmaier  
)  
Serial No.: 10/827,214 ) Group Art Unit: 1712  
)  
Date Filed: April 19, 2004 )

For: COLLOIDAL COMPOSITIONS AND METHODS OF PREPARING SAME

DECLARATION OF BRIAN T. HOLLAND UNDER 37 C.F.R. § 1.132

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

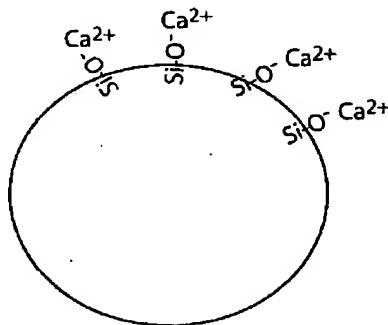
Dear Sir:

Brian T. Holland declares that:

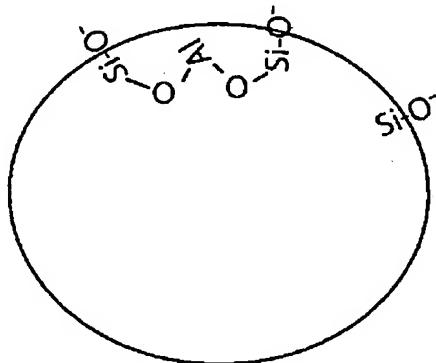
1. He is a co-inventor of the above-captioned U.S. Patent Application, which is now pending.
2. He attended and graduated from University of Wisconsin at Milwaukee, receiving a Bachelor of Science degree in Chemistry.
3. He attended and graduated from University of Minnesota at Twin Cities, receiving a Doctorate of Philosophy in Materials Chemistry.
4. He is currently employed as a Staff Scientist at Nalco Company and that his employment with Nalco began in 2003. Prior to that he was employed at JohnsonDiversey where he worked in the field of Nanotechnology. Prior to his employment at JohnsonDiversey, he was employed at Procter & Gamble, where he worked in the field of Nanotechnology.
5. He has read and understood the above captioned patent application and the pending Office Action dated May 2, 2007.
6. The claimed invention pertains to a synthetic metal-containing colloidal silicate composition.

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7. It is well known in the art that the interaction of magnesium and calcium ions with silicic acid is negligible. This type of interaction indicates that these cations are only in solution and do not interact with the silica. Watanabe indicates the presence of alkaline earth cations, added based on CaO and MgO, but it is actually the cation in solution and as a result is not part of the silica framework as shown below (calcium ion on the surface of the colloidal silica particle).

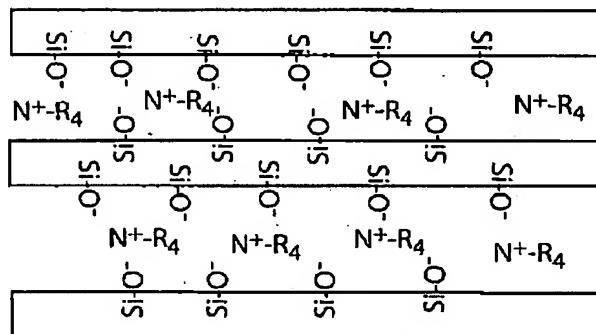


8. Aluminum (and some other metals as detailed in the specification), on the other hand, incorporates into the silica framework with an intimate covalent linkage and provides increased acidity to the colloidal particle. This acidity can be used as a catalyst. Silica alone is a weak acid. Below is an example showing aluminum as part of the silica framework. The aluminum imparts a significant increase in acidity compared to colloidal silica.

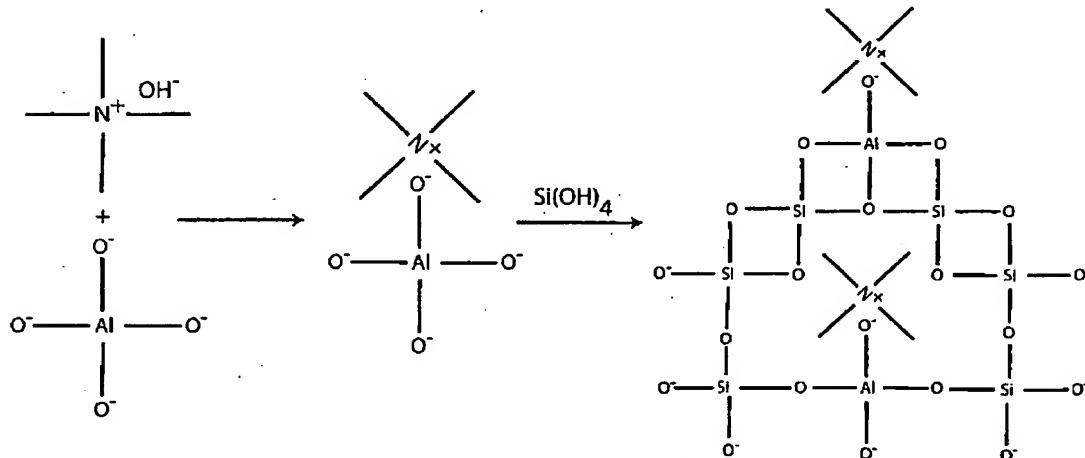


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9. In terms of the clay versus colloidal silica with quaternary amines, the materials are completely different. A clay is a layered material with the quaternary amine as the cation, similar to the calcium ions shown above. Below is an example showing the layered material with the quaternary amine as the counter ion. Such clay particles have N<sup>+</sup>-R<sub>4</sub>, (R<sub>4</sub>=H, CH<sub>3</sub>, etc) as counter ion. Again, not part of the material.



10. When colloidal aluminosilicate, for example, is synthesized with a quaternary amine, the quaternary amine becomes part of the material. The figure below shows the interaction with the aluminosilicate framework, as part of the lattice.



11. The invention is not based on using ethanol or tetraethyl orthosilicate as the silica source. Rather, silicic acid is the source of silica, which reduces synthesis time significantly compared to other methods, such as that used in Mintova.

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12. Brian T. Holland further declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements and the like may jeopardize the validity of the present application or any patent issuing thereon.

Dated: 9/4/2007

Signed: BTH

Brian T. Holland, Ph.D.